

IN THE CLAIMS:

Kindly cancel claims 1-5 without prejudice and add new claims 6-13 as follows.

Claims 1-5 (canceled).

6. (NEW) A status discriminating apparatus for a human, an animal, or a machine, the apparatus comprising:

(a) an ultrasonic vibration detecting sensor comprising:

- (i) a container main body;
- (ii) a liquid packed tightly in the container main body; and
- (iii) an ultrasonic vibrator arranged to transmit an ultrasonic wave

into the liquid and to receive an ultrasonic wave reflected from the liquid surface, which serves to detect behavior of a detection object;

(b) an ultrasonic transmission and reception control device comprising:

- (i) an ultrasonic transmitter/receiver;
- (ii) a signal converter operably connected to the ultrasonic transmitter/receiver; and
- (iii) a microcomputer operably connected to the signal converter so the microcomputer issues a transmission signal, at specific time intervals, to the ultrasonic vibration detecting sensor, and the microcomputer receives a reception signal, at specific time intervals, from the ultrasonic detecting sensor, and wherein the

microcomputer calculates a risk associated with the detection object from a change in maximum amplitude of the received reception signal; and

(c) a cable coupling the ultrasonic detecting sensor with the ultrasonic transmission and reception control device so as to provide an input and output passage for the transmission signal and reception signal.

7. (NEW) The status discriminating apparatus according to claim 6, wherein the microcomputer of the ultrasonic transmission and reception control device is programmed to perform the following operations: compile time series data of maximum amplitude values of received reception signals entered at specific time intervals from the ultrasonic vibration detecting sensor, to calculate a standard deviation about a change point of a specific number of maximum amplitude values, to extract a spectrum peak by fast Fourier transform of a waveform of the time series data, and to calculate risk by a fuzzy If-Then rule from the standard deviation about the change point and the spectrum peak of the waveform.

8. (NEW) The status discriminating apparatus according to claim 6, wherein the detection object is selected for the group consisting of a human, an animal and a machine.

9. (NEW) A status discriminating method executable by a status discriminating apparatus for a human, an animal, or a machine, wherein the apparatus comprises a microcomputer operatively connected to transmit and receive signals with an ultrasonic vibration detecting sensor, the method comprising the steps of:

(a) detecting vibration caused by behavior of a detection object using the ultrasonic vibration detecting sensor, which in response to vibration detection sends a reception signal to the microcomputer of the status discriminating apparatus; and

(b) analyzing the reception signal sent by the ultrasonic vibration detecting sensor to the microcomputer, wherein the reception signal analysis comprises the steps of:

(i) compiling time series data of maximum amplitude values of reception signals detected at specific time intervals by the ultrasonic vibration detecting sensor;

(ii) normalizing the time series data to form analytical data;

(iii) calculating a standard deviation about a change point of maximum amplitude values in a specific number of reception signals of the analytical data;

(iv) extracting an ultrasonic wave spectrum peak by fast Fourier transform of a waveform of the analytical data;

(v) calculating risk by applying the calculated standard deviation and extracted spectrum peak to a fuzzy If-Then rule; and

(vi) discriminating normal or abnormal status of the detection object from the calculated value of the risk.

10. (NEW) The status discriminating method according to claim 9, wherein the risk is calculated by using a membership function expressing fuzzy If-Then rule.

11. (NEW) The status discriminating method according to claim 9, wherein the microcomputer is a component of an ultrasonic transmission and reception control device, and transmits transmission pulses and reception permit pulses to an ultrasonic transmitter/receiver of the control device at specific time intervals, and the microcomputer controls transmission of ultrasonic waves from the ultrasonic vibration detecting sensor as well as acceptance of ultrasonic wave reception signal from the ultrasonic vibration detecting sensor.

12. (NEW) The status discriminating method according to claim 9, wherein the detection object is selected for the group consisting of a human, an animal and a machine.